

STATE OF CALIFORNIA  
Budget Change Proposal - Cover Sheet  
DF-46 (REV 08/17)

Fiscal Year 2019-20	Business Unit 2660	Department Transportation	Priority No.
Budget Request Name 2660-004-BCP-2019-GB		Program 1835056-Maintenance 1850010-Equipment	Subprogram

Budget Request Description  
Road Repair and Accountability Act Implementation Plan

Budget Request Summary

The California Department of Transportation is requesting Road Maintenance and Repair Account authority to support increased State Highway Operations Protection Program and Maintenance Program activities statewide. This request is being made to ensure that appropriation levels for Fiscal Year 2019-20 are consistent with anticipated Road Maintenance and Repair Account revenues created for those uses.

Requires Legislation <input type="checkbox"/> Yes <input type="checkbox"/> No	Code Section(s) to be Added/Amended/Repealed	
Does this BCP contain information technology (IT) components? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes, departmental Chief Information Officer must sign.</i>	Department CIO	Date

For IT requests, specify the project number, the most recent project approval document (FSR, SPR, S1BA, S2AA, S3SD, S4PRA), and the approval date.

Project No. Project Approval Document: Approval Date:

If proposal affects another department, does other department concur with proposal? ☐ Yes ☐ No  
*Attach comments of affected department, signed and dated by the department director or designee.*

Prepared By DENNIS T. AGAR	Date 12/20/2018	Reviewed By CLARK PAULSEN	Date 12/20/2018
Department Director LAURIE S. BERMAN	Date 12/20/2018	Agency Secretary BRIAN C. ANNIS	Date 12/20/2018

Department of Finance Use Only

Additional Review: ☐ Capital Outlay ☐ ITCU ☐ FSCU ☐ OSAE ☐ CALSTARS ☐ Dept. of Technology

PPBA Original Signed By: Steve Wells	Date submitted to the Legislature JAN 10 2019
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### A. Budget Request Summary

The California Department of Transportation (Caltrans) requests \$2.0 billion in local and capital funding for transportation projects under the Road Repair and Accountability Act of 2017 (SB 1). The overall funding request includes position authority for 333 Maintenance and 13 new permanent Equipment Program positions. The Caltrans support request includes \$28.8 million ongoing resources and \$26.8 million limited term resources totalling \$55.6 million in FY 2019-20. This request is for Road Maintenance and Rehabilitation Account (RMRA) funding.

### B. Background/History

SB 1 will provide stable ongoing funding to meet needs for state highway repair and maintenance, bridge and culvert repair, enhancements to the state's trade corridors, and solutions for the state's most congested commute corridors. SB1 will also provide stable ongoing funding for local roads' maintenance and repairs and matching funds for local partnership projects. Transit and intercity rail will also receive additional funding through SB 1, and local governments will have access to funding for active transportation projects.

The California State Transportation Agency (CalSTA) and Caltrans have adopted a "fix-it-first" approach in delivering infrastructure maintenance projects. Applying a "fix-it-first" perspective to the State Highway System (SHS) prioritizes available funding to address these basic needs. Most of the costs to respond to these system preservation needs are predictable and can be scheduled based on periodic facility inspections and assessments, while other costs, such as damage caused by natural disasters and accidents, are unexpected and must be dealt with as they occur. An underlying assumption in keeping the SHS in good condition is that there is sufficient funding available to provide the needed preventative maintenance activities. Absent this funding, the SHS deteriorates at a faster rate and necessitates much more expensive remedies due to unacceptable conditions.

In Fiscal Year 2015-16, the Division of Maintenance worked with the California State Auditor in identifying high priority activities to direct funding. This effort continues implementing the "zone" approach to allocate funding throughout the State. The requested resources will address priority activities Statewide such as – Pavement (potholes, cracks, and spalls), Bridge Maintenance, Guardrail, Striping, Signs, Traffic Signals and Roadway Lighting.

The Department will continue to use a combination of contract dollars and increased positions to execute work and raise the Level of Service (LOS) scores, with increases in lane miles paved, pothole and culvert repair, and bridge maintenance activities as noted herein. The Department will direct these resources for activities statewide, with a focus on freight and trade corridors.

### C. State Level Considerations

SB 1 addresses the growing problem of funding shortfalls for California's transportation infrastructure, which has led to deferred maintenance on the state highway system and local streets and roads. SB 1 funding will provide several billion in revenue for state and local transportation projects and programs long term.

Caltrans' mission to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability is consistent with SB 1 use.

By providing much needed resources, this legislation provides dollars for local and state capital projects, bridge and culvert repair, maintenance and rehabilitation on the state highway system, congestion relief, trade corridor enhancement, active transportation, intercity and commuter rail, freeway service patrol and local streets and road repair.

Increased maintenance workload supports local and state projects, bridge and culvert repair, maintenance and rehabilitation on the SHS, congestion relief, trade corridor enhancement, active transportation, and local streets and road repair.

### D. Outcomes and Accountability

The improvements funded from SB 1 resources continue to be implemented immediately. Caltrans accelerated projects totaling approximately \$993 million in FY 2017-18. FY 2018-19 SHOPP construction projects from all funding sources are estimated to add over \$3.5 billion in highway repair projects statewide.

Completed field and Highway Maintenance projects last year include over 2,000 lane miles of highway pavement overlay, over 80,000 potholes repaired, 86,000 crack seal repairs, culvert clean out and inspections, and bridge deck maintenance work. The field maintenance work over a two-year period will increase the Level of Service performance measurement an average of 22 percent overall. RMRA funding for the maintenance projects this year is estimated to total over \$400 million. Planned outcomes in current year include approximately 1,600 lane miles of pavement maintenance, over 123,000 potholes repaired, increasing safety projects such as guardrail repair and replacement by 1.0 million feet and inspection of over 100,000 culverts. In keeping with increased activities, the Program is projecting similar workload for FY 2019-20 with 1,700 lane miles of pavement maintenance, an additional 90,000 potholes repaired, and maintaining the current level of service for lighting repairs at 99%. Further workload details are outlined below in Section G and Attachment 1.

The Road Repair and Accountability Act of 2017 includes several measures which seek to ensure the best use of transportation funding. Caltrans has already implemented numerous measures that will enable it to provide necessary repairs and transportation improvements. Through robust asset management and specific performance and accountability measures, Caltrans is implementing a roadmap to success.

Approval of RMRA resources allows Caltrans to continue to focus activities on the SHS that will improve and maintain both safety and overall road conditions for motorists, such as pothole repair, pavement resurfacing and more complex restoration and improvement projects in the State Highway State Highway Operations and Protection Program (SHOPP).

### E. Analysis of All Feasible Alternatives

This request seeks to continue implementation consistent with statewide workload increases to maintain highway infrastructure in good condition. If this budget change proposal is not approved, highway maintenance will continue to deteriorate at an advanced pace causing increases to workload backlog.

### F. Implementation Plan

Appropriations to expend these funds are included in the Caltrans budget, the State Transit Assistance budget, the Secretary for the California State Transportation Agency budget, and the Shared Revenue budget. This Budget Change Proposal (BCP) highlights expenditures in the Caltrans budget from the RMRA resources, which primarily fund highway maintenance and rehabilitation. Other Programs will continue receiving consistent RMRA funding levels in the Caltrans FY 2019-20 budget as noted on the following table:

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## Analysis of Problem

	Item	Program	Activity	2018-19 GB Expenditures (thousands)	2019-20 GB Expenditures (thousands)
Capital	802-3290	SHOPP	Capital Projects	\$563,000	\$900,000
	302-3290	SHOPP	Bridges & Culverts	\$300,000	\$300,000
Capital Programs Total				\$863,000	\$1,200,000
Support	001-3290	Maintenance	Bridges & Culverts	\$100,000	\$100,000
	505-3290	Capital Outlay Support	Positions & Associated Resources	\$39,000	\$90,552
	505-3290	Local Assistance	Local Partnership Project Support	\$231	\$231
	505-3290	Program Development	SHOPP Programming & California Transportation Commission Support	\$400	\$421
	505-3290	Maintenance	State Highway System Maintenance	\$475,500	\$300,000
	505-3290	Equipment	Maintenance Equipment	\$0	\$17,658
	505-3290	State Planning-PIDs	Capital Project Planning Initiation Documentation	\$18,000	\$18,338
	505-3290	Regional Planning	Statewide Regional Planning Grants	\$114	\$114
	505-3290	Administration	Support Resources-HR, Budgets, Accounting, Facilities, & Audits	\$690	\$722
Support Operations Total				\$633,935	\$528,036
Local	102-3290	Local Planning	Planning Grants	\$24,886	\$24,886
	601-3290	Local Partnerships	Local Projects Matching Funds (off system)	\$199,769	\$120,333
	801-3290	Local Partnerships	Local Project Matching Funds (on-system)	\$0	\$34,670
	108-3290	Active Transportation Program	Bicycle & Pedestrian Facility Projects	\$99,999	\$99,998
	308-3290	Active Transportation Program	Capital Budget Placeholder	\$1	\$1
Local Programs Total				\$324,655	\$279,888
Total				\$1,821,590	\$2,007,924

### Division of Maintenance:

With a strong need for maintenance of our transportation infrastructure and assets, Caltrans has looked at the needs of the Maintenance Program (Program) in developing this resource request. High priority activities such as pavement, culverts, and bridges will continue to be used to increase maintenance services statewide.

The Program resource history table below provides a summary for the past five years. The Program proactively increased temporary positions in FY 2016-17 and 2017-18 in preparation of increased workload. A Department May Revise Finance Letter for FY 2017-18 authorized 43 additional positions for Maintenance and a FY 2018-19 BCP's authorized 404 additional positions giving the Program position authority of 6,521.5.

During FY 2016-17 and 2017-18 the Department aggressively, pursued delivery of the SB 1 Program by hiring in anticipation of future staffing increases. This process has provided the benefit of staff being fully trained, assigned to specific crews working on specific activities and having hands on experience. This process has also expedited project delivery and expenditure of the increased funding and gave the Program temporary flexibility with staffing. The long-term plan includes this request for additional position authority in the Program to manage the permanent funding increase with a stable permanent workforce. The goal is to maintain a stable workforce and manage vacancies based on an average five percent annual attrition rate.

### Resource History for Maintenance

(Dollars in thousands)

Program Budget	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Authorized Expenditures	\$1,492,484	\$1,541,242	\$1,566,986	\$1,512,461	\$1,993,189
Actual Expenditures	\$1,912,012	\$1,426,265	\$1,657,773	\$1,445,856	\$2,263,683
Authorized Positions	5,681.4	5,707.4	5,703.9	6,014.3	6,117.5
Filled Positions	6,092.0	6,139.2	6,300.4	6,890.3	6854.9
Vacancies	-411	-432	-596	-876	- 737.4



## Analysis of Problem

The Program resources are divided into two primary categories: Field Maintenance and Highway Maintenance (HM) production. In FY 2017-18 the Program successfully expended its increased funding and improved the condition of the SHS. In FY 2018-19 the Program received funding for 400 additional staff as well as additional funds for HM work. To assist in maintaining a steady workforce and to continue meeting production goals, authority for 333 more positions is needed. The transition to an increased permanent workforce will allow the Program to continue progress in all activities, decreasing the amount of deferred maintenance workload.

Many activities along the SHS are evaluated for performance and given a corresponding Level of Service (LOS) score. LOS in many areas are below established program goals. The Program is utilizing new resources to address high priority work and increase LOS scores in at least 10 high priority maintenance activities and improve the condition of several assets. These LOS scores are based on a range from 0 to 100 (0 being poor and 100 being the best). The high priority field maintenance activities each have an LOS goal between 80 and 90 over the next several years. Recent weather events have caused accelerated pavement failure in many areas of the State. The needs in potholes/cracks/spalls have increased to unprecedented levels. Permanent resources will stabilize maintenance forces to address the existing needs of the SHS as well as additional needs caused by weather-related events which are anticipated to continue in the future.

### The Maintenance Program is requesting:

- Permanent increase in position authority for 333 positions and \$28,931,000 (\$25,884,000 Personal Services (PS) and \$3,047,000 Operating Expense (OE) for the Program;
- One-time increase of \$9,000,000 additional OE for specialized equipment rental to support the increased maintenance workload statewide;

The additional resources requested in this proposal will allow the Program to continue to improve pavement, bridges and the associated high priority maintenance activities. RMRA funding allows the program to continue to reduce deferred activities and increase LOS in target areas. An LOS score provides a “snapshot” of the road segment condition for a specific activity – as a “quality check”, therefore production could increase LOS depending on the amount of specific improvement needed.

The Program has historically shifted resources to the extent possible to address the most critical of needs. Dedicated resources will support quick responses to service requests and better plan for specific activities, while addressing the multitude of roadway accidents, spills, natural disasters or other items that often-times cause a redirection from planned maintenance activities. With the resources to support a stable and permanent workforce, the Program can continue to move forward in targeting production goals in all areas.

Caltrans will use a combination of contract dollars to deliver more projects and increased positions in maintenance forces to raise the LOS scores in high priority activities such as lane miles paved, pothole and culvert inspection/repair, and bridge maintenance activities. Caltrans will continue to direct resources in accordance with a “fix it first” approach and maintain increased service levels in high traffic areas statewide with a focus on public safety, freight and trade corridors.

Increases in maintenance activities, such as pothole repair, crack sealing, culvert cleaning, inspection and repair, and bridge maintenance, increase the need for specialized fleet equipment to perform these tasks. The Division of Equipment manages the fleet. The current fleet is aging and requires a higher level of maintenance and repair. At times repairs can take several weeks to months requiring the Program to rent equipment throughout the state to meet the needs. Funding to obtain rental equipment addresses the approximate one to two-year lead time for the acquisition and manufacture of fleet equipment also requested in this proposal by the Division of Equipment. The Maintenance program is requesting a one-time increase of \$9 million that will provide relief in the short term while new equipment is placed into service and aid us in responding to emergencies.

## **G. Maintenance Workload History**

### Field Maintenance Activities:

The Program has focused the recent funding increase on both Field Maintenance work and HM projects. The five primary field activities are Pavement which includes potholes, cracks, and spalls; Electrical with lighting

and traffic signals; Safety focuses on striping, signs and guardrail; Structures refers to Bridges; and Roadside refers to Culverts as shown on Attachment 1. While several of the activities show an increase in production comparing FY 2017-18 to the three-year average, some show a decline. These declines are largely due to an overlap between HM projects and work performed with field maintenance activities. One example of overlapping work would be spalls repair. Field Maintenance data shows the number of spalls repair went down in FY 2017-18, but this is because HM pavement overlays remedied spalls as part of broader maintenance efforts. In FY 2018-19 the Program is focusing the permanent field maintenance resources in the areas of Pavement, Structures and Roadside. Caltrans expects FY 2018-19 will show an increase in production repairs for Pavement, Structures and Roadside. Dedication of the new permanent resources in FY 2019-20 to align with changing needs will further increase LOS scores in Field Maintenance activities such as potholes, cracks, spalls, culvert cleaning and inspection, and bridge maintenance activities.

The following bullet points reflect the efforts of Field Maintenance staff to improve conditions in key focus areas and gives examples of improvements in specific sub-areas such as potholes, cracks, culverts, and bridges that are detailed on the attached table.

- Potholes: Pothole numbers have grown exponentially with extreme winters in recent years. As a result, as Maintenance forces work diligently to fill as many potholes as possible with dedicated resources, the number of new potholes identified throughout the year make production goals for this activity a moving target. In addition, there is not a direct one-for-one correlation between an increase in LOS score and increase in production. Although HM projects are not measured with an LOS score, some HM-1 Pavement project work includes the repair of potholes, which is a good example of the various factors that impact an LOS score outside of field production. Maintenance forces filled 86,356 potholes in FY 2017-18 and anticipate filling 43 percent more, or 123,706 total potholes, for an LOS of 88 in FY 2018-19, and are projecting an aggressive workload of 222,772 in FY 2019-20. The Program will achieve these outcomes by aligning and dedicating resources to address high level priority activities, including pavement work such as potholes. The Program projects an increase in the LOS to the goal score of 90 by 2022.
- Cracks: Much like potholes, California's climate, as well as the average daily traffic on our transportation system impact this activity. In FY 2017-18, field maintenance repaired 14,495 lane miles of cracks. Additionally, funding for pavement projects was increased through Highway Maintenance contracts to address the increased need. The Program is planning to repair approximately 17,718 cracks for an increase of 22 percent in FY 2018-19. Within FY 2019-20 the Program is projecting 19,917 lane miles repaired for a further increase of 12 percent. Consistent dedicated resources will assist the program to reach a target LOS goal of 90 for this activity by 2021.
- Spalls: Spall workload continues to rise with weather and the average daily traffic. The Program repaired 7,262 spalls in FY 2017-18. The Program is projecting to repair approximately 11,612 spalls, a 60 percent increase in FY 2018-19. Consistent dedicated resources in FY 2019-20 will address approximately 6,100, or 53 percent, more spalls, for a total of 17,776. Focusing additional resources on spall repair will assist the Program to reach the performance LOS goal of 90 by 2020.
- Median Barrier/Guardrail: This activity is imperative to the safety of the traveling public. The Program repaired 673,642 feet of guardrail in FY 2017-18 and is projecting to replace 1,093,600 feet of guardrail with an LOS score of 84 in FY 2018-19. With permanent resources, the Program intends to replace 859,909 feet of guardrail with a goal LOS of 85 in FY 2019-20. This reduced annual workload with a dedicated workforce will allow the program to focus on addressing 90 percent of guardrail strikes within 72 hours. This LOS movement is in line with a goal score of 95 for this safety element to be achieved by 2022.
- Roadway Lighting: This activity is crucial to the safety of the California's drivers on the SHS. The Program has repaired 25,234 lights in FY 2017-18. The Program is projecting to replace or repair

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approximately 29,734 lights and continue to maintain an LOS of 99 in FY 2018-19 to provide safe roadways. In FY 2019-20, the Program projects to replace or repair 26,859 lights. Dedicated resources in this area will assist in reaching LOS goals. Caltrans is also replacing approximately 29,000 more lighting fixtures with more efficient LED (Light Emitting Diodes) in the next two years.

- Traffic Signals and other Traffic Management Systems (TMS) elements: Traffic signals are in place to inform drivers of multiple issues concerning the SHS. Properly functioning signals are imperative to a successful and safe flowing highway system. The Program repaired or replaced 39,439 signals in FY 2017-18 and is projecting to replace/repair approximately 42,939 signals with a goal LOS of 84 in FY 2018-19. With these resources, the Program plans to repair/replace 44,089 total signals in FY 2019-20. This will in turn increase the LOS, moving closer to a goal score of 95 by 2021.

In addition to Traffic Signals, the Program is responsible for maintaining other TMS elements such as: Changeable Message Signs, Ramp Meters, Close Circuit TV cameras, Highway Advisory Radios, Roadway Weather Information Systems, Census Stations, Traffic Monitoring Stations and the communication systems to connect these TMS elements to the central systems. Currently, approximately 67 percent of the TMS elements are in good condition. This compares to June 2016 when 59 percent were in good condition. These additional resources will enable the Program to meet the SB 1 performance goal of 90 percent TMS elements in good condition by 2027.

Striping/Raised Pavement Markers: A dedicated effort, along with new pavement and striping projects will assist to increase LOS scores for this activity. The Program striped 27,576 linear miles in FY 2017-18 and is projecting to stripe approximately 38,400 linear miles with a goal LOS of 90 in FY 2018-19. Efforts are underway to move to a 6-inch stripe (versus traditional 4-inch) to improve visibility/safety for the traveling public. Staffing consistency for striping will enable Maintenance crews to handle almost 2,000 additional linear miles annually, with a planned 40,448 linear miles in FY 2019-20. Caltrans is integrating 6-inch reflective striping as standard operations. The 6-inch striping provides increased visibility to the traveling public. A dedicated effort in striping is anticipated to increase LOS to a goal of 90 by 2020.

- Signs: Signs, much like signals, provide state highway users pertinent information in successfully and efficiently navigating the highway system. The Program has repaired/replaced 73,754 signs in FY 2017-18 and is projecting to replace/repair 78,154 signs with a goal LOS of 73 in FY 2018-19. The planned dedication of resources to this effort includes replacing/repairing 1,270 more signs annually, for a total of 79,424 in FY 2019-20. The goal LOS score for this activity is 95, which is anticipated to be achieved by 2020. Caltrans is also replacing signs with high retro-reflectivity panels which increase visibility to drivers.
- Bridge Maintenance Activities: The Program performed maintenance on 38 bridges in FY 2017-18 and is projecting to perform bridge maintenance on approximately 112 bridges in both 2018-19 and 2019-20, for an increase of 195 percent. These activities include joint repairs, light bridge deck treatments, and bridge rail repair work. With dedicated bridge crews and resources, the Program plans to maintain increased bridge maintenance activities. This momentum and continued dedicated support can help meet a goal LOS score of 90 by 2020. These projections and LOS goals are aggressive; however, recent production trends and additional resources will support Maintenance forces meeting this target.
- Culvert/Drainage: This activity consists of assessing various attributes for each culvert, including waterway adequacy, shape, alignment, and materials via inspection with subsequent repair as part of Caltrans' overall asset management plan. Culvert maintenance included inspection of 74,774 culverts for planned clean-out and potential referral for replacement in FY 2017-18, with a projection of 103,774 culverts to be inspected in FY 2018-19. The dedication of resources in

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this area will continue to work towards a culvert goal of 119,454, or 15 percent increase in FY 2019-20. This effort will help achieve 90 percent of culverts in good/fair condition by 2027.

Stabilized resources allow the Program to focus all maintenance activities in support of the overall health of the SHS. Field maintenance contracts also augment workload when specialized training or certification are needed and when there are insufficient personnel to meet a time-sensitive need. These activities include some hazardous waste clean-up, tree/brush removal, bridge painting, striping and lighting.

### HM Projects:

Along with dedicating more positions and resources to the field maintenance workload noted above, the Program will continue to allocate resources to its Pavement, Bridge, and Culvert HM portfolios to address the maintenance needs of these assets. Accelerating projects in these three areas will assist in increasing workload within high volume/primary freight and trade corridor routes. These routes typically include but are not limited to:

District 1: US 101; District 2: I-5; District 3: I-5, I-80, US 99, District 4: I-80, I-580/880, US 101; District 5: US 101; District 6: I-5, SR-99, SR-58, SR-152; District 7: I-5, I-10, I-710, SR-60, SR-91; District 8: I-10, I-15, I-40, I-215, SR-58, SR-60; District 9: US-395, SR-14, SR-58; District 10: I-5, SR-99; District 11: I-5, I-8, I-15; I-805; District 12: I-5.

It is important to note key factors that impact production trends. For the most efficient use of resources, HM projects are multi-year funded. As a result, expenditures will be charged for the life of the project across multiple years; yet production is only captured once in the year the project is delivered. Looking at the life of a project across multiple years will show true production and expenditures. However, when considering a single fiscal year perspective, future years will reflect a project's expenditures without the benefit of the corresponding increase in production. Further impacting HM production trends are revised strategic planning performance measure requirements and target goals. HM activities are also subject to some fluctuation depending on annual District workload projections and various emergency-related needs that can interrupt normal plans.

The bullets below highlight the high priority areas in HM production.

- FY 2017-18, HM-1 Pavement projects completed 2,860 lane miles. By the end of FY 2018-19, 1,660 lane miles are planned to be completed, with an additional 1,700 lane miles estimated by the end of FY 2019-20. There are several contributing factors to decreased pavement production, such as changing some production from a 2-inch overlay to 3 inches, but creating an increase of 3 to 5 years additional pavement service life. Additionally, increased project costs due to a strong economy, competitive bidding, increased industry demand and an increase in unit prices for key materials/items resulting in an overall decrease of in the total lane miles treated by the HM program. For these reasons, HM projects do not always show an upward climbing production rate. HM costs and production vary upon circumstance and do not have a proportionate increase to funding. The Program will continue to monitor needs and evaluate the best strategy for any given project based on the circumstance and resources available.
- The Bridge program is another example where production trends are impacted by various factors. The nature of the work funded in Bridge is in response to repair recommendations identified in Bridge/Tunnel Inspection Reports. Caltrans is committed/required to inspect all bridges every two years. Workload can change pending inspections but is anticipated to continue as a primary focus in the overall HM workload. In FY 2017-18, 150 bridges in the 544-total workload improved condition from fair or poor. The FY 2018-19 workload shows an estimated increase of 246 more bridges, for a total of 790, which represents a 45 percent increase from FY 2017-18. The FY 2018-19 workload includes both inspections and repairs with the concentration on repair work. The estimated production for FY 2019-20 is approximately 670 bridges. By the end of FY 2019-20, an additional 400 bridges are planned to improve condition. Another measurable increase to good condition will be generated by SHOPP work production rather than maintenance, due to structural deficiencies that become part of the SHOPP (capital) plan. Potential fluctuations, up or down, in production are based



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on inspections, workload projections, and delivery each year. Maintaining bridges in good condition will increase and stabilize with a consistent workforce.

- For FY 2017-18, 130 culvert projects were completed after field maintenance inspection and clean-out. HM maintenance does the minor repair and more complex repair or replacement culvert work is referred to the SHOPP. By the end of FY 2018-19, 252 culverts are planned to be completed, with an approximate 737 culverts scheduled for minor maintenance work. FY 2019-20 projections are to clean and schedule 989 culverts for repairs to improve the overall number in good condition. This is an aggressive target with inspection work yet to be completed which could impact the overall good condition goal. The addition of dedicated resources to this effort will assist in achieving the target plan.

The overall performance measurement for HM-1 Pavement shows 1,100 lane miles moving from bad/fair to good in the past year and a target of another 1,600 lane miles in good condition by the end of FY 2019-20 for an average pavement maintenance condition improvement of approximately 10 percent. In addition to the pavement lane miles that improve in condition, the remaining pavement lane miles completed under HM projects are maintained to retain their current condition of fair or good. A total of 544 bridges in the overall current maintenance workload of 790 bridges are repaired or under repair and will be maintained in good condition by year end 2019. A total of 1,119 culverts will be inspected and improved where possible by maintenance work to a state of good repair by year end 2020 and will be maintained in good repair going forward. The good condition of the three focus areas in HM workload will continue to improve and maintain good condition as workload continues to stabilize in the future.

### **Division of Equipment:**

To be successful in meeting all these expectations, the Program works closely with the Division of Equipment to assure field crews have the equipment necessary to perform the work and respond to many unpredictable events that occur. Therefore, increased expectations for the Program necessitates resources be to be added for the Division of Equipment.

#### **The Equipment Program is requesting:**

- Permanent increase of 13 positions and \$1,363,000 (\$1,245,000 PS and \$118,000 OE), a onetime OE cost for tool sets for \$355,000, and a total of \$3,531,000 for ongoing replacement and repair costs, tool complement and personal protective equipment beginning in FY 2020-21;
- Two year limited-term resources for engineering work and \$344,000 (\$326,000 PS and \$18,000 OE) each year to provide support services for implementing new equipment purchases;
- \$31,160,000 over two years (\$15,580,000/year) for the acquisition and manufacture of the required fleet equipment needed to build and maintain transportation infrastructure statewide.

The resource history table below provides a summary of the past three years for the Division of Equipment.

**Resource History for Equipment**  
(Dollars in thousands)

Program Budget	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Authorized Expenditures	\$185,325	\$177,241	\$190,776	\$191,956	\$205,441
Actual Expenditures	\$374,067	\$176,898	\$273,581	\$206,270	\$173,152
Authorized Positions	634.6	634.6	634.6	634.6	634.6
Filled Positions	745.1	709.5	699.5	698.6	670
Vacancies	-110.5	-74.9	-64.9	-64.0	-35.4

Caltrans' vehicles and equipment are essential to the preservation, maintenance, and incident/emergency response for safe operation of the state transportation system. Local partners and the traveling public depend

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on Caltrans to ensure that California roadways are safe and dependable. The Division of Equipment request includes a two-year acquisition and manufacture of fleet equipment needed to maintain a safe transportation infrastructure. The two-year limited-term equipment engineering workload will include specifications and design of approximately \$16.4 million of equipment such as dump trucks, fence repair trucks, cone bodies, bridge repair trucks, and vactor trucks. Seventy cabs and chassis' along with major components will be purchased and delivered to the Caltrans production shop where 13 mechanics will manufacture those into specialized maintenance vehicles. Approximately \$14.8 million of completed units such as cargo trucks, guardrail trucks, personnel hoists, and mechanic trucks will be purchased. The engineers will also create specifications for approximately 98 pieces of maintenance equipment, which will then be advertised for award and delivery as turn-key units for use by the Maintenance program. There is a total of 168 pieces (24 types) of equipment in this request, all of which require specialized engineering.

Engineering hours were based on examining the data for engineering hours tracked for the same/similar equipment types and starting with similar levels of engineering units completed as the expected start point of the requested equipment. Different models, changing model years, different fuel types require design drawings and electrical schematics. Design specs from prior builds are reviewed and modified based on performance in the field. There is no average or ratio used relating purchase dollars to work effort.

The Division of Equipment uses a production value of 1,350 hours to justify only manufacturing workload. The Maintenance Repair Unit (MRU) method is used in the fleet management industry to predict future repair costs of individual maintenance classes of vehicles based on historical repair cost data. The MRU method is typically used to predict mechanic labor hours needed to maintain a fleet for staffing purposes. This analysis is derived from historical production workload measurement and does not include indirect staff costs such as specialized training, mandatory safety meetings, data entry work, general shop duties, and standard work relief time (approximately 23 percent or 400 hours/position).

The first two years will require the 13 mechanic related positions to produce equipment based on Caltrans engineering specifications and deploy equipment Statewide for maintenance projects. The ongoing workload for these positions will include maintenance services on the new and existing equipment at various districts statewide also requiring supervisory/lead activities. The initial production years provide staff with specialized training, knowledge and skill sets associated with the new equipment that will be utilized in the various districts around the state. The hiring includes one Supervisor, one Lead mechanic, two material specialists and nine (9) heavy equipment mechanic classifications to implement production and manage the equipment maintenance long term.

The same MRU method may be used to calculate parts and vendor repair costs for a maintenance class using historical data. Division of Equipment currently employs the MRU to predict labor hours and will use the MRU in the future to help predict total cost of ownership for each maintenance class of vehicles. The MRU method is used by both public and private fleets to justify funding levels, to analyze appropriate staffing levels. New equipment has limited warranties and they do not include wear parts or preventative maintenance. On manufactured vehicles, only cab and chassis would have warranties. Warranties vary depending on the type of equipment but are considered during the MRU calculation process. Replacement and repair amortizations are spread over the life of the vehicle, including warranty period, based on historic MRU data,

The Maintenance Program has an increased work force to fulfill the workload demands of increased projects. This workload requires a corresponding increase of equipment, which results in a one-time increase in workload and costs for Division of Equipment associated with the development of equipment design and specifications, equipment manufacturing, and equipment acquisition costs. Using the requested limited term resources, the additional equipment will be purchased and manufactured over a 2-year term.

The two-year limited term resources will be used for engineering the technical specifications and design drawings to purchase equipment; design and select components; design overall equipment fabricated and produced in HQ Shop; inspect equipment and components; manage purchasing contracts; and certify complete vehicles.

## **Analysis of Problem**

Thirteen permanent mechanical and materials positions will initially provide production labor to manufacture the additional equipment needed by Maintenance crews. Once the new equipment is in service, the positions will be transitioned to maintenance and repair of the equipment statewide.

The permanent increase in equipment will also result in permanent workload and costs associated with the ongoing maintenance, repair, and eventual replacement of the additional equipment. The Maintenance Program has increased workload and increased staffing which increases equipment usage, therefore increased maintenance/repair of equipment in general. The permanent increase in OE will fund the ongoing replacement, parts, and commercial repair costs of equipment beginning in 2021. The permanent OE increase also facilitates ongoing costs for shop tools, specialized technical training, and personal protective equipment for the new 13 positions.

Attachment 2 provides details related to the new equipment purchases and related workload.

### **H. Supplemental Information**

N/A

### **I. Recommendation**

It is recommended that this request be approved to continue the implementation of the provisions of the Road Repair and Accountability Act.

The table below compares the three-year pre-RMRA production average with past year actual and projected outcomes. The table reflects the efforts of Field Maintenance staff to continue improving conditions in priority activities and gives examples of improvements in areas such as potholes, cracks, culverts, and bridges.

**Field Maintenance Production**

		3 Year Pre-RMRA Funding Average (14-15-16-17)		FY 17-18 Actual			FY 18-19 Projected Goals			FY 19-20 Planned Goals		
Unit of Measure		Production	Positions	Production	LOS	Positions	Production	LOS	Positions	Production	LOS	Positions
<b>Pavement</b>												
Potholes	Each	90,357	57	86,356	87	50	123,706	88	135	222,772	89	135
Cracks	Lane Miles	6,350	61	14,495	42	70	17,718	57	125	19,917	74	125
Spalls	Each	8,175	10	7,262	44	10	11,612	60	23	17,776	90	23
<b>Electrical</b>												
Lighting	Each	22,572	78	25,234	99	89	29,734	99	94	26,859	99	94
Traffic Signals	Each	38,836	69	39,439	71	71	42,939	84	79	44,089	90	79
<b>Safety</b>												
Striping	Linear Miles	38,277	56	27,576	80	64	38,444	90	74	40,448	90	74
Signs	Each	76,395	130	73,754	62	135	78,154	73	140	79,424	95	140
Guardrail	Feet	780,474	145	673,642	58	156	1,093,642	84	178	859,909	85	178
<b>Structures</b>												
Bridge	Each	33	45	38	35	49	112	48	113	112	90	113
<b>Roadside</b>												
Culverts	Each	93,626	75	74,774	N/A	70	103,774	N/A	103	119,454	N/A	103

\* LOS % increase between FY 17-18 and FY 18-19

\*\* LOS % increase between FY 18-19 and FY 19-20

## EQUIPMENT ESTIMATE

Attachment 2

Maintenance Class - Description	Total Eq	Equipment Cost Ea	Total Equipment Cost	Annual cost of parts and Commercial Repair	Extended Annual Cost	Engineering Hours Per Project	HQ Shop Labor Hours Per unit	Total Shop Labor Hrs.	Production Hrs	2017 MRU Factor	MRU X Equip Qty	DOE Add'l HEM
01237 - CONE BODY	21	\$ 74,500.00	\$ 1,564,500.00	\$ 1,315.00	\$ 27,615.00	300	195	4,095	3.03	49.96	1,049.16	0.78
03313 - DUMP BODY W/PLOW & SPREADER	15	\$ 266,000.00	\$ 3,990,000.00	\$ 5,145.00	\$ 77,175.00	600	636	9,540	7.07	106.04	1,590.60	1.18
03413 - DUMP BODY W/PLOW & SPREADER	6	\$ 305,000.00	\$ 1,830,000.00	\$ 3,972.00	\$ 23,832.00	600	636	3,816	2.83	106.04	636.24	0.47
03349 - CARGO BODY 15FT W/O HOIST	15	\$ 145,000.00	\$ 2,175,000.00	\$ 1,568.00	\$ 23,520.00	450	-	-	-	107.88	1,618.20	1.20
03449 - CARGO BODY 15FT W/O HOIST	6	\$ 185,000.00	\$ 1,110,000.00	\$ 1,082.00	\$ 6,492.00	-	-	-	-	107.88	647.28	0.48
03350 - CARGO BODY 15FT W/HOIST AND W/ATTENU	3	\$ 145,000.00	\$ 435,000.00	\$ 1,082.00	\$ 3,246.00	-	-	-	-	99.42	298.26	0.22
04798 - FENCE REPAIR	2	\$ 375,000.00	\$ 750,000.00	\$ 5,001.00	\$ 10,002.00	750	950	1,900	1.41	84.26	168.52	0.12
04898 - FENCE REPAIR	1	\$ 415,000.00	\$ 415,000.00	\$ 5,001.00	\$ 5,001.00	750	950	950	0.70	84.26	84.26	0.06
00830 - UTILITY BODY, 3/4-TON, GAS	3	\$ 65,000.00	\$ 195,000.00	\$ 1,207.00	\$ 3,621.00	350	-	-	-	32.93	98.78	0.07
04796 - GUARDRAIL TRUCK	2	\$ 275,000.00	\$ 550,000.00	\$ 5,001.00	\$ 10,002.00	350	-	-	-	65.40	130.80	0.10
04896 - GUARDRAIL TRUCK	1	\$ 310,000.00	\$ 310,000.00	\$ 5,001.00	\$ 5,001.00	-	-	-	-	65.40	65.40	0.05
54817 - SIGN CMS LED TRAILER MTD SOL	3	\$ 33,000.00	\$ 99,000.00	\$ 802.00	\$ 2,406.00	250	-	-	-	14.71	44.13	0.03
35008 - FORKLIFT 2 TON	3	\$ 30,804.05	\$ 92,412.15	\$ 766.00	\$ 2,298.00	250	-	-	-	19.16	57.48	0.04
01237 - CONE BODY	3	\$ 69,000.00	\$ 207,000.00	\$ 1,315.00	\$ 3,945.00	Included in line 3	195	585	0.43	46.50	139.50	0.10
03350 - CARGO BODY 15 FT W/O HOIST	6	\$ 145,000.00	\$ 870,000.00	\$ 1,568.00	\$ 9,408.00	Included in line 6	-	-	-	64.80	388.80	0.29
02350 - CARGO BODY W/HOIST 12FT DIESEL	5	\$ 127,000.00	\$ 635,000.00	\$ 1,568.00	\$ 7,840.00	400	-	-	-	62.90	314.50	0.23
02450 - CARGO BODY W/HOIST 12FT DIESEL	1	\$ 127,000.00	\$ 127,000.00	\$ 7,597.00	\$ 7,597.00	-	-	-	-	62.90	62.90	0.05
05390 - BRIDGE REPAIR	5	\$ 330,000.00	\$ 1,650,000.00	\$ 2,576.00	\$ 12,880.00	900	2,000	10,000	7.41	104.60	523.00	0.39
05490 - BRIDGE REPAIR, CNG	1	\$ 370,000.00	\$ 370,000.00	\$ 6,407.00	\$ 6,407.00	900	2,000	2,000	1.48	104.60	104.60	0.08
01337 - CONE BODY, Diesel	6	\$ 75,000.00	\$ 450,000.00	\$ 1,636.00	\$ 9,816.00	Included in line 3	195	1,170	0.87	45.60	273.60	0.20
00844 - UTILITY BODY CREW CAB	6	\$ 70,000.00	\$ 420,000.00	\$ 2,003.00	\$ 12,018.00	Included in line 11	-	-	-	44.90	269.40	0.20
60248 - TRAILER POLE	2	\$ 25,500.00	\$ 51,000.00	\$ 93.00	\$ 186.00	200	-	-	-	13.60	27.20	0.02
01283 - PERSONNEL HOIST, 38' - 40', NON-INSULATED	15	\$ 187,000.00	\$ 2,805,000.00	\$ 1,551.00	\$ 23,265.00	300	-	-	-	39.23	588.45	0.44
01383 - PERSONNEL HOIST, DIESEL	14	\$ 195,000.00	\$ 2,730,000.00	\$ 1,166.00	\$ 16,324.00	-	-	-	-	82.72	1,158.08	0.86
01536 - Mechanics Truck	13	\$ 163,000.00	\$ 2,119,000.00	\$ 505.00	\$ 6,565.00	300	-	-	-	42.70	555.10	0.41
05383 - CATCH BASIN & SEWER LINE CLEANER	10	\$ 520,975.00	\$ 5,209,750.00	\$ 8,235.00	\$ 82,350.00	-	40	400	0.30	83.30	833.00	0.62
<b>Total</b>	<b>168</b>		<b>\$ 31,159,662.15</b>		<b>\$ 398,812.00</b>	<b>7,650</b>		<b>34,456</b>	<b>25.52</b>		<b>11,727.24</b>	<b>8.69</b>
						4.4 PYs over 2yrs		25.5 PYs over 2 yrs				
						2.2 PYs per yr		12.75 PYs per yr				
NOTE: MRU is Maintenance Repair Unit - number of hours per year to maintain & repair equipment												



## BCP Fiscal Detail Sheet

BCP Title: 2019-20 BCP SB1 Maintenance

BR Name: 2660-004-BCP-2019-GB

### Budget Request Summary

	FY19					
	CY	BY	BY+1	BY+2	BY+3	BY+4
Personal Services						
Positions - Permanent	0.0	346.0	346.0	346.0	346.0	346.0
<b>Total Positions</b>	<b>0.0</b>	<b>346.0</b>	<b>346.0</b>	<b>346.0</b>	<b>346.0</b>	<b>346.0</b>
Salaries and Wages						
Earnings - Permanent	0	17,294	17,294	17,088	17,088	17,088
<b>Total Salaries and Wages</b>	<b>\$0</b>	<b>\$17,294</b>	<b>\$17,294</b>	<b>\$17,088</b>	<b>\$17,088</b>	<b>\$17,088</b>
Total Staff Benefits	0	10,161	10,161	10,041	10,041	10,041
<b>Total Personal Services</b>	<b>\$0</b>	<b>\$27,455</b>	<b>\$27,455</b>	<b>\$27,129</b>	<b>\$27,129</b>	<b>\$27,129</b>
Operating Expenses and Equipment						
5301 - General Expense	0	1,982	494	483	483	483
5302 - Printing	0	85	85	85	85	85
5304 - Communications	0	386	386	384	384	384
5306 - Postage	0	20	20	20	20	20
5320 - Travel: In-State	0	272	272	270	270	270
5322 - Training	0	39	39	39	39	39
5326 - Utilities	0	296	296	294	294	294
5340 - Consulting and Professional Services -	0	15,580	15,580	0	0	0
5344 - Consolidated Data Centers	0	103	103	102	102	102
539X - Other	0	9,371	1,716	3,531	3,531	3,531
<b>Total Operating Expenses and Equipment</b>	<b>\$0</b>	<b>\$28,134</b>	<b>\$18,991</b>	<b>\$5,208</b>	<b>\$5,208</b>	<b>\$5,208</b>
<b>Total Budget Request</b>	<b>\$0</b>	<b>\$55,589</b>	<b>\$46,446</b>	<b>\$32,337</b>	<b>\$32,337</b>	<b>\$32,337</b>

### Fund Summary

Fund Source - State Operations						
3290 - Road Maintenance and Rehabilitation	0	55,589	46,446	32,337	32,337	32,337
<b>Total State Operations Expenditures</b>	<b>\$0</b>	<b>\$55,589</b>	<b>\$46,446</b>	<b>\$32,337</b>	<b>\$32,337</b>	<b>\$32,337</b>
<b>Total All Funds</b>	<b>\$0</b>	<b>\$55,589</b>	<b>\$46,446</b>	<b>\$32,337</b>	<b>\$32,337</b>	<b>\$32,337</b>

### Program Summary

Program Funding						
1835056 - Maintenance	0	55,589	46,446	32,337	32,337	32,337
1850010 - Equipment Service Program	0	17,658	18,947	4,838	4,838	4,838

1850019 - Distributed Equipment Service Program	0	-17,658	-18,947	-4,838	-4,838	-4,838
<b>Total All Programs</b>	<b>\$0</b>	<b>\$55,589</b>	<b>\$46,446</b>	<b>\$32,337</b>	<b>\$32,337</b>	<b>\$32,337</b>